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The American Fertilizer

Vol. 95 AUGUST 16, 1941 No. 4

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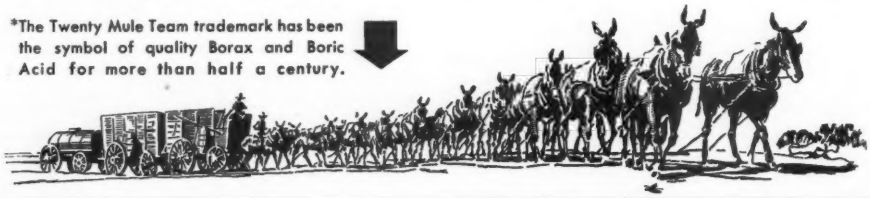

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See Page 23

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AMERICAN FERTILIZER

"That man is a benefactor to his race who makes two blades of grass to grow where but one grew before."

Vol. 95 AUGUST 16, 1941 No. 4

Fertilizer Problems From the Fertilizer Industry Viewpoint*

By M. H. LOCKWOOD

Eastern States Farmers Exchange, Springfield, Mass.

TWO important crops in Pennsylvania, potatoes and corn, have been selected as a basis for this discussion. In a recent survey by letter, opinions have been secured concerning the need for fertilizer experiments in Pennsylvania on potatoes and corn. The replies cover a wide range which I believe are not far different from ideas which might be expressed by interested growers of those two crops. Such questions as the proper rates and ratios of nitrogen, available phosphoric acid and potash, the relative merits of high analysis and ordinary analysis fertilizers, the effect of the use of stable and green manures on commercial fertilizer practice, the effect of acid and neutral fertilizer mixtures for potatoes on limestone soils, as well as methods of application and rates per acre, naturally crowd to the front when we begin to think about a subject like this.

However, other approaches may be even more important. One of these may be the need for information on fertilizing these crops as part of a rotation rather than as a specific crop from a one year point of view. Obviously, the question also arises as to what fertilizer, if any, other than superphosphate is required for corn when manure produced on the farm is used in preparing land for that crop. Still another approach might be the question of what is sound fertilizer practice under a system of farming which involves relatively low rates of general fertility as contrasted with the production of the same crops under higher levels of fertility. With the wider use of hybrid corn, we have reason to believe that some varieties respond more readily to high levels of fertility than others. And so, on and on, we might go almost endlessly.

A recent incident leads me to believe that fertilizer users are also thinking along these lines. One of our field representatives and our agronomist were enjoying a dinner at a restaurant in Lancaster, Pa., and had discussed during the dinner hour some points of mutual interest involving the use of fertilizers on crops in that area. As they rose to leave the restaurant, a young man at the next table introduced himself and said that, having heard some of their remarks, he wanted to ask a question. He stated that he had been using as much as 800 pounds per acre of a 40-unit high analysis fertilizer mixture in the production of potatoes on his farm in that section. He also pointed out that he and his brothers who are farming with him had convinced themselves that this rate of application was better than less, although they had gradually reached that rate only after several years of increasing rates. His question was whether, under his conditions, he could use even more fertilizer and gain in net return and whether, if he did further increase the amount applied, some of it should not be brought into the rotation through some other crop than the potato crop itself.

Importance of Pennsylvania Corn and Potatoes

Pennsylvania is no puny producer of potatoes and corn. This State harvested an average of 1,302,000 acres of corn with an average acre yield of 39 bushels, and a total annual yield averaging 51,087,000 bushels for the 1928-1937 period. Even though the average acre yield was higher than that for Maryland,

* An address at the Fertilizer Conference, State College, Pa., June 25, 1941.

New Jersey, New York or Ohio, it might well be still higher. Four other states in the Northeast did have higher average acre yields during the same ten year period. Who can say that their yields per acre were even as high as they might well be?

On potatoes, this State harvested an average annual acreage of 213,000 from 1928 to 1937, with an average yield per acre of 120 bushels, and a total annual average yield of 25,584,000 bushels. At sixty cents per bushel, this yield represents an annual value on the farms of this State of fifteen million dollars. But Pennsylvania is outranked during that ten year period by sixteen other States in average yield per acre. Any of us who know even a few potato producers in Pennsylvania know that much more than 120 bushels per acre can reasonably be grown.

Rates and Ratios

May we raise the challenge that adequate data are not yet available in Pennsylvania as applied to Pennsylvania soils and Pennsylvania management systems concerning rates and ratios of fertilizers for corn and potatoes? Admittedly, this kind of work may seem to be needed most, yet we must recognize that there are many difficulties to be surmounted in securing the answers to questions on these points. Nitrogen supply is largely a function of management practices followed. Potash supply is, in part, a soil problem. Phosphorus supply is largely associated with the fixing power of the soil. Always and eternally, weather is a disturbing factor. Any attack on the problem of ratios and grades may easily become so cumbersome as to miss its objective, but the fact remains that we in the fertilizer industry, as with the Extension Service Staff, are called on constantly to give a prompt and clear answer to the question "of what ratio or grade and at what rate should I select and use a fertilizer for my corn or my potato crop?"

Table I.

Corn—Agricultural Statistics, 1940

	Av. 1928-37 Total Acres Harvested	Average 1928-1937 Yield Per Acre	Yield 1939	Av. 1928-37 Total Yield for State (bushels)
Pa.	1,302,000	39.0	42.5	51,087,000
N. J.	188,000	38.2	38.0	7,186,000
N. Y. ...	629,000	33.7	35.0	21,221,000
Md.	510,000	30.6	36.0	15,617,000
Ohio	3,612,000	36.5	50.0	171,250,000

Av. 1928-37

Corn—Rank in Yield Per Acre

1st.	New Hampshire	41.1 bu.
	Massachusetts	41.1 bu.
3rd.	Vermont	39.9 bu.
4th.	Rhode Island	39.8 bu.
5th.	Pennsylvania	39.0 bu.

American Fertilizer Practice on Corn

	Lb. of Fertilizer Per Acre	Lb. of Plant Food Per Acre	Increased Yield Per Acre from Use of Fertilizer	All Crops Improved Method of Applying Fertilizer	Increase in Value of Crop for Each Dollar Spent for Fertilizer
Pa.	218	42.3	17 bu.	37.1%	$2.15 silage 2.87 grain
N. J.	343	67.7	24 bu.	62.4%	1.94 silage 2.08 grain
N. Y.	267	52.3	21 bu.	37.2%	2.91 silage 1.94 grain
Md.	255	49.5	13 bu.	47.3%	1.89 grain
Ohio	129	27.1	12 bu.	33.6%	3.22 grain

Table II.

Potatoes—Agricultural Statistics, 1940

	Av. 1928-37 Total Acres Harvested	Av. 1928-37 Yield Per Acre	Yield 1939	Av. 1928-37 Total Yield for State (bushels)
Pa.	213,000	120	120	25,584,000
N. J.	46,000	163	136	7,615,000
N. Y. ...	236,000	123	127	29,005,000
Md.	31,000	103	95	3,257,000
Ohio	128,000	96	105	12,308,000

Av. 1928-37

Potatoes—Rank in Yield Per Acre

1st.	Maine	267 bu.
2nd.	California	222 bu.
3rd.	Idaho	214 bu.
4th.	Washington	166 bu.
	Rhode Island	166 bu.
6th.	New Jersey	163 bu.
7th.	Connecticut	154 bu.
8th.	New Hampshire	153 bu.
9th.	Utah	152 bu.
10th.	Colorado	146 bu.
11th.	Nevada	142 bu.
12th.	Oregon	140 bu.
13th.	Vermont	136 bu.
14th.	Massachusetts	131 bu.
15th.	New York	123 bu.
16th.	Virginia	121 bu.
17th.	Pennsylvania	120 bu.

American Fertilizer Practice on Potatoes

	Lb. of Fertilizer Per Acre	Lb. of Plant Food Per Acre	Increased Yield Per Acre from Use of Fertilizer	Improved Method of Applying Fertilizer	Increase in Value of Crop for Each Dollar Spent for Fertilizer
Pa.	651	132.8	102 bu.	37.1%	$3.78
N. J.	1,786	379.8	138 bu.	62.4%	2.52
N. Y.	947	189.4	107 bu.	37.2%	2.55
Md.	1,352	240.7	111 bu.	47.3%	2.18
Ohio	575	119.6	59 bu.	33.6%	3.04

There has been much discussion in recent years in Pennsylvania concerning the relative merits of a 1-3-3 or 1-4-4 and a 1-2-2 ratio of nitrogen, available phosphoric acid and potash in fertilizer mixtures and the rates recommended for potatoes. Are we not correct in stating that more specific data as a basis for replies to such a question should be developed? We think it should.

I am sure that none of us want such experiments to try to differentiate between small variations in fertilizer grade and in order to avoid such comparisons, probably some such system as the following typical nine-plot series would be advisable.

Master Series

A. NPK; B. $\frac{\text{NPK}}{2}$; C. (NPK) x 1.5.

Subordinate Series

1. a. $\frac{\text{NPK}}{2}$; b. $\frac{\text{NPK}}{2}$; c. $\frac{\text{NPK}}{2}$.

2. a. (1.5 N) PK; b. N (1.5 P) K; c. NP (1.5 K).

Such an outline gets away from all except major comparisons. If the basic normal (A in the above outline) rate and ratio is carefully selected to represent the best we know for application on the field selected, and if we may have abundant replications, we have the basis for answering many questions.

Ordinary vs. High Analysis Fertilizers

Both fertilizer industry representatives and agricultural authorities differ in their ideas and recommendations on this subject. We find, on one hand, individuals and organizations recommending and aggressively pushing the increased use of high analysis mixtures and, on the other hand, individuals and organizations condemning any mixed fertilizer which contains more than 25 units of nitrogen, available phosphoric acid and potash. We find, in extreme cases, mixtures of concentrations as high as 56 or even 65 units and we have other grades running as low as the Pennsylvania minimum of 16 units. Obviously, two important factors in comparing high analysis and ordinary analysis mixed fertilizers are the need for and the supply of calcium and sulphur. Some of us would contend that most of the calcium needed should be supplied in the form of liming materials and most of us do not know whether sulphur is important or how large its supply is in this State. The economic saving to fertilizer users in the use of high analysis mixtures might easily amount to more than a million dollars each year in this State. In fact, it would probably be nearer two million than one.

Neutral vs. Acid Fertilizers

For the potato crop in particular and on limestone soils or soils nearly neutral in reaction, the question is often asked whether a fertilizer should be neutral or acid and, if acid, whether it is better to have it acid in reaction in an amount that will mean 300 pounds or 100 pounds of limestone per acre as a neutralizing equivalent. This question is naturally one which involves potato scab and may be partly or entirely outside the province of the commercial fertilizer used.

Method of Application

The band method of applying fertilizer for both corn and potatoes has abundantly demonstrated superiority over other methods so far reported. Any experiments which might be conducted, therefore, should probably use this method as a standard. If new methods are to be tried, they may involve some of the refinements of band application and some of the broadcast and plowed down principles which may logically prove sound if we can develop a scheme of fertilizer practice which involves entire rotations rather than just corn or potato crops. In any case, closely supervised methods of application should be a part of such experiments as may be conducted. Both highly accurate experimental machinery and commonly used farm machinery are available, and if we wish to get down to some fine details on a phase of fertilizer application on which there is still a question, we might try to find out whether the apparent segregation of various ingredients in ordinary mixed fertilizers has any practical significance in the efficiency of crop production. Granular fertilizers might also be included in some comparisons. Presently available machinery should also be tested accurately as to its effectiveness of fertilizer location as related to seed.

Farm Manures

We need more accurate data on the actual analysis of farm stable manure as it is handled and used on Pennsylvania farms. Too many of our recommendations for fertilizer practice are based on manure analyses which some of us suspect are more theoretical than real. In order that we may not be misunderstood in

(Continued on page 24)

Superphosphate Production for Fiscal Year Increases

Superphosphate production in the fiscal year 1940-41 in the plants of acidulators which report to The National Fertilizer Association totaled 3,929,150 tons, an increase of 7 per cent from the preceding year. In the first half of 1941 production was also slightly above the corresponding period of 1940. Plants in the northern area reported an increase of 8 per cent over 1939-40, while a rise of 6 per cent was registered in the southern area. Total production in the fiscal year of those reporting was at a new high point.

Total shipments in 1940-41, according to the consolidated statement of reporting acidulators, overran 1939-40 by 14 per cent, with the more pronounced increase taking place in the North. Increases were reported in all classes of shipments for the July-June period.

Since shipments of superphosphate increased more in the last year than did production, total stocks at the close of June were somewhat under the level of June, 1940. The larger part of the decline occurred in the northern area, where the rise in shipments was more pronounced. Stocks of bulk superphosphate on June 30th were 17 per cent smaller than a year earlier, whereas stocks of base and mixed goods were 12 per cent larger.

June production was at an unusually high level for the month, being above any other June for more than eleven years.

Superphosphate Production, Shipments, and Stocks for July-June, 1941 and 1940

Expressed Throughout in Equivalent Tons of 16% A. P. A. Based on Reports by Acidulators to The National Fertilizer Association.

	1940-41	1939-40
Production:		
Bulk superphosphate	3,810,357	3,547,124
Base and mixed goods	118,793	130,358
Total Production	3,929,150	3,677,482
Shipments:		
Superphosphate:		
To mixers	1,449,176	1,362,332
To other acidulators	622,773	513,035
To consumers, etc.	1,048,539	750,371
Total Superphosphate	3,120,488	2,625,738
Base and mixed goods	1,407,347	1,344,215
Total Shipments	4,527,835	3,969,953
Stocks—June 30th:		
Bulk superphosphate	678,991	819,960
Base and mixed goods	258,878	231,132
Total Stocks	937,869	1,051,092

BARRETT ISSUES NEW BOOKLET ON WINTER GRAINS IN SOUTH

Continuing its fall promotion theme of the past several years, The Barrett Company has just issued the 1941 Edition of its booklet "Prepare in the Fall—for Grain in the Spring."

The presentation is part of a program sponsored by Barrett in the southeastern states to encourage the greater use of mixed fertilizer under grain—as the basis for obtaining a full response from the usual nitrate top-dressing in the spring.

The pamphlet portrays the results of an extensive series of field demonstrations illustrating this "two way" effect.

In addition, several excellent photographs show the "by-product" benefits of fall fertilizer used under grain . . . better protection for the soil against winter-erosion, healthier and hardier plants less likely to suffer winter injury, and—as an extra dividend—more and better winter grazing.

Copies of the booklet may be obtained by writing The Barrett Company.

ROBERT M. SALTER TO HEAD U. S. D. A. SOIL AND FERTILIZER DIVISION

Appointment of Robert M. Salter to head the Division of Soil and Fertilizer Investigations in the Bureau of Plant Industry has been announced by the U. S. Department of Agriculture. This division comprises the former Divisions of Soil Chemistry and Physics, Fertilizer Research, and Soil Microbiology. "We are particularly fortunate in obtaining the services of one who has such a broad knowledge of soil use and crop production in this new post." said Dr. E. C. Auchter, chief of the Bureau of Plant Industry. "He has been an able administrator and well-liked co-operator."

During the past year Mr. Salter has been director of the North Carolina Agricultural Experiment Station. He is nationally known in soils work, serving first as soils chemist and agronomist at the West Virginia Experiment Station from 1917 to 1921. He then became Professor of Soils at the Ohio State University and from 1929 to 1940 served as chairman of the Department of Agronomy in charge of soils and crops in the University and the Ohio Agricultural Experiment Station. He was made Vice-Director of the Ohio Agricultural Station in 1940, later accepting the directorship in North Carolina. He is a Fellow of the

American Society of Agronomy, its president in 1936, and for several years has been chairman of a committee on fertilizers.

"Mr. Salter brings to the Department a thorough and first hand knowledge of practical farming methods in the corn and cotton belts," said Doctor Auchter. "He has personally performed and directed research which has led to improved procedure now widely used in soil management and crop production."

Mr. Salter expects to assume his new duties in the Department on October 1st. These will consist of directing research activities in soil microbiology, legume inoculants, fertilizer manufacture and use, and investigations on soils with special reference to productivity and its problems as applied to managing soils to maintain crop production.

SHALLENBERGER NOMINATED DISTRICT CHAIRMAN

At a meeting of members of the National Fertilizer Association in District 9, held at Shreveport, La., on July 15th, C. D. Shallenberger, of the Shreveport Fertilizer Works, was selected as the nominee for the position of District Chairman to succeed the late P. H. Manire. Mr. Shallenberger's name has been recommended to the Board of Directors of the Association for their official action.

UNEMPLOYMENT AT LOW LEVEL

Unemployment in June was at the lowest level since June, 1930, according to the Conference Board. The June total is placed at 2,536,000. Excluding persons in the Government's emergency labor force, the number actually idle is estimated at only slightly more than 500,000. Employment in June was at an all-time high.

July Tag Sales

Fertilizer tax tag sales in July in the 17 reporting States were 71 per cent larger than in July, 1940. July sales are seasonably low and year-to-year comparisons are not particularly significant. Probably of more importance than the percentage increases is the fact that 13 of the 17 States reported larger sales this year than last.

Aggregate sales in the first seven months of this year were 7 per cent larger than in the corresponding period of 1940. Every State recorded an increase, indicating the widespread nature of the current upward trend in fertilizer use. Sales have been moderately below 1937 but fertilizer sales in other than the tag sale States have been above that year. Fertilizer consumption this year will be at a new all-time peak.

Farm cash income in the first half of this year was 13 per cent larger than a year ago, a somewhat larger rise than that in tag sales.

FERTILIZER TAX TAG SALES

State	July 1941 Per Cent of 1940	July 1941 Tons	July 1940 Tons	July 1939 Tons	January-July 1941 Per Cent of 1940	January-July 1941 Tons	January-July 1940 Tons	January-July 1939 Tons
Virginia	196	7,933	4,041	4,776	104	306,246	295,376	317,428
N. Carolina	158	4,350	2,751	4,862	102	991,801	971,605	1,104,882
S. Carolina	274	5,898	2,150	1,475	105	667,207	636,654	636,389
Georgia	115	1,783	1,553	570	104	743,879	712,773	664,744
Florida	195	31,594	16,184	19,986	119	365,853	306,884	284,789
Alabama	146	2,050	1,400	2,200	100	562,900	560,100	546,650
Mississippi	213	1,600	750	12,050	108	316,392	292,595	277,646
Tennessee	74	1,331	1,805	1,234	100	122,250	121,648	116,319
Arkansas	500	500	100	100	120	112,500	93,450	64,972
Louisiana	250	50	20	102	111	147,410	132,681	123,578
Texas	33	415	1,275	360	114	117,476	103,181	80,734
Oklahoma	168	505	300	200	163	9,380	5,748	6,398
Total South	179	58,009	32,329	47,915	105	4,463,294	4,232,695	4,224,529
Indiana	157	7,630	4,862	3,500	123	243,526	198,244	160,814
Illinois	...	450	0	150	130	47,001	36,198	29,725
Kentucky	80	352	438	0	102	98,311	96,700	92,556
Missouri	...	1,768	86	65	145	38,071	26,265	20,933
Kansas	1	30	2,085	0	117	5,598	4,798	1,455
Total Midwest	137	10,230	7,471	3,715	119	432,507	362,205	305,483
Grand Total	171	68,239	39,800	51,630	107	4,895,801	4,594,900	4,530,012

Beyond and Behind the Boom*

By MERLE THORPE
Editor, Nation's Business

I AM deeply sensitive of the compliment implied in this recurring engagement, because I spoke at your Association's annual dinner in New London in those good old Coolidge days in 1928.

Since then I have observed the continuing increase of prestige that has come to this Association. You have built yourselves into the minds of the press and other public relations agencies as a great handmaiden of agriculture.

Business and industry are made up of natural resources, of manufacturing, and of distribution, but we forget that organizations like this are the handmaidens that are necessary in order to make the industrial machine go along. Oftentimes in this association and organization work, we come so close to it that we fail to appreciate just what it means to the American way of life.

I remember a British commissioner who came to this country some 20 years ago, to study our methods and find out why our tail lights were showing to the rest of the world. In that report one of the most important and most emphatic things said was that in the United States they found a peculiar institution. They said that businessmen here, competitors of long standing, joined together in the novel idea that if they could make their industry successful and prosperous, each unit of that industry would be successful and prosperous. The Manchester Guardian, commenting on the report, editorially said, "That is a novel procedure. Here in Great Britain, if two competitors were seen talking together on Threadneedle Street, it would be a matter of front page news in the London Telegraph."

But we in the United States, since the beginning, have learned to cooperate and work in groups and through local organizations like chambers of commerce, have been able to improve our situations and bring prosperity not only to the groups and units but to individuals who take part in that work.

Business is booming. Ask anyone! Factories are booked with defense orders. Many are breaking all-time records in production. Net output cannot keep up with demand. Fear of price advances and shortages brings expansion of inventories and long-time commitments. As Attorney General Jackson said the other day, "It's a great war, if it will only last."

Behind the feverish activities that are going on are impending dislocations which plague the thoughtful business man. What dimensions will the defense programs finally assume? In quantity and in duration of time? Will it be a 5 or a 10-year war? Some 12 men very close to public affairs had a little dinner party the other night. Each put on a slip of paper how long he thought the war would last. The average was 4½ years. The longest was 10 years. This question, I say, is one of those that are worrying thoughtful businessmen today.

Others are: What charges will there be against the people's income? Will the stimulated construction of new plants leave ghost towns in their wake as the last war did? Will there be tombstones in graveyards for corporations, as in 1919? Will it be possible to demobilize the thousands of men and women already brought to Washington on war work? More important, will it be possible ever to get out from under the thousands of new "emergency" government regulations now flowing forth?

What of communities whose interests have been violently directed into new channels? Can they re-orient themselves? And what of thousands of corporations which must face a revision of their primary commercial and institutional objectives? These factors are shot through with more immediate and practical considerations. What course will the war administration take? Will taxes go up? Where will the new burdens fall? Can non-defense items be pared? Will necessary borrowings come from earnings and savings, or will bank credit be swelled?

The lives of the young men conscripted for war duty are in the hands of Washington. Just as surely, the lives of all of us will be determined for years to come by the policies adopted by Washington during the next few months.

For, beyond the boom, must be contemplated the manner of life Americans will lead. From all the welter of confusion and bewilderment one factor causes most concern and conjecture: How will the movement from an economy of peace to one of war affect the standard of living of the individual?

* An address at the Annual Dinner of the National Fertilizer Association, White Sulphur Springs, W. Va., June 10, 1941.

These are two jobs before the Nation today. One is to continue, and in increasing volume, the production of clothing, food, homes, radios, automobiles, and electrical appliances. This job spells "way of life," or standard of living. The other is to produce tanks and bombing planes and cantonments. To build a wall of defense calls for millions of additional hours of work, conscription of white collar and hand labor.

American statesmanship will be put to a test such as never before, to see to it that these hours of work are additional to and not subtracted from the production of the necessities, conveniences, and even the luxuries of life. For in this country luxuries have had a happy way of shortly becoming conveniences, as conveniences become necessities. It must be a statesmanship that transcends politics.

Added War Production Needed

Since June, 1940, Congress has appropriated over 20 billions of dollars for war production. This will not unduly test the Nation's general industrial capacity if only we understand that more work is necessary. They will add during 1941—considering how fast contracts can be gotten under way—around 20 per cent to the output of 60 billions of dollars in manufactures as measured by the census in 1937. The large part of this volume calls upon the metal-producing industry and its allied branches to raise their 22 billions of 1937 output by about 30 per cent.

Exact comparisons are not possible, but it may be noted that the value of manufactures was 62 billions in 1919, whereas in 1914 it was 24 billions. In the 25 months from April, 1917, to April 30, 1919, the expenditures of the Treasury chargeable to the war exceeded 21 billions, an amount that we are now expending in 12 months, or hope to expend. Of this amount the Army alone spent over 12 billions for purchases and transportation. In addition were the purchases of the Navy, and 12 billions of purchases by the Allies. It is obvious that the demand upon industry in the World War period was proportionately, and absolutely, several times heavier than the requirements now for defense preparations. Besides, the demands of 1917 and 1918 were added at a time when industrial activity had reached a high level, whereas in 1940 the demand found the level well below capacity.

But any comparison of 1941 with 1917-18, without certain correctives, is fatal. Political controls today of the three essentials to production—men who work, men who furnish the tools, men who plan and coordinate the operation—are quite different from 1917-1918. Fifty Federal agencies have, in the interim, been set up to regulate, control, and supervise the former relatively free partnership. The bargaining responsibility of management and the owner of the tools now is controlled indirectly by Government, through 42 lending agencies, double bookkeeping, and the foolish idea that "debt is not debt if owed to one another." And management, responsible for successful operation, has had substituted for its one-time authority and responsibility reins and blinders by Washington. Bureaucratic brakes now slow down, and often freeze, every business operation, from the issuance of securities to the labeling a package.

The job is not as simple as in 1917-18.

The "political" economists in Washington are under the illusion that they can plan the impossible. They delude themselves into thinking that the present policy of less hours of work, with what amounts to penalties in the form of overtime for extra work, will produce the greater output needed. They urge speed, pointing out the 70-hour-a-week preparation of Mr. Hitler; yet in the same breath they, to quote the Secretary of Labor, contend that workmen can do as much in 40 hours a week as 48. They ignore the penalty upon production provided by apprentice restrictions, and wishfully sit back and expect bricks to come forth without straw.

The Unemployment Myth

The greatest fallacy, perhaps, is that the defense work and spending will assimilate the six or seven million "unemployed." Some day this 10-year myth of unemployment will be exploded with a bang. Most of our present-day problems are due to the error of failing to distinguish between employables and unemployables.

That fallacy may prevent our getting the two major jobs done, because neither political party has had the courage to face the facts. New Deal leaders refused to segregate employables from unemployables, on the ground that their emergency measures rested upon millions out of work. The Republicans refused on the ground that it was the best argument they had to show that the New Deal had failed to relieve unemployment.

What are the facts? Why is the Nation leaning upon a weak reed if it expects the "army of unemployed" to furnish the additional hours to produce war equipment? Un-

(Continued on page 22)

THE AMERICAN FERTILIZER

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August Cotton Report

A United States cotton crop of 10,817,000 bales is forecast by the Crop Reporting Board of the United States Department of Agriculture, based upon information gathered as of August 1st. Such a production would be 1,749,000 bales, or 14 per cent, less than the 1940 crop, and 2,429,000 bales, or 18 per cent, less than the 10-year (1930-39) average. This would be the smallest crop since 1935.

The average yield for the United States is forecast at 224.4 pounds per acre. which is 28.1 pounds less than the 1940 yield, but 19.0 pounds more than the average of 205.4 pounds per acre.

In South Carolina the weather has been very unfavorable for cotton, and the prospective yield per acre is the lowest since 1922 Conditions have also been unfavorable in Georgia, Florida and Louisiana, and yields per acre in these States are expected to be considerably below average. Prospects are much better than average, however, in Missouri, Tennessee, Arkansas and Mississippi. Cali-

State	Production (Ginnings)[1] 500 lb. gross wt. bales: Average, 1930-39 1,000 bales	1940 Crop 1,000 bales	1941 Crop Indicated Aug. 1 1,000 bales
Missouri	292	388	452
Virginia	33	25	21
N. Carolina	629	739	497
S. Carolina	824	966	428
Georgia	1,132	1,010	656
Florida	32	21	14
Tennessee	465	509	552
Alabama	1,145	779	798
Mississippi	1,585	1,250	1,557
Arkansas	1,281	1,501	1,441
Louisiana	703	456	428
Oklahoma	750	802	537
Texas	3,766	3,234	2,572
New Mexico	100	128	116
Arizona	159	195	230
California	333	545	499
All other	16	18	19
United States	13,246	12,566	10,817
Sea Island[2]	...	4.0	4.1
Amer. Egyptian[2]	17	33	80
Lower Calif. (Old Mexico)[3]	38	60	84

[1] Allowances made for interstate movement of seed cotton for ginning.

[2] Included in State and United States totals. Sea Island grown principally in Georgia and Florida. American Egyptian grown principally in Arizona.

[3] Not included in California figures, nor in United States total.

fornia yield per acre is indicated considerably above average, but less than the record yield of last season.

The 23,102,000 acres published in this report is the estimated acreage in cultivation on July 1st less the 10-year average abandonment. This acreage is 3.0 per cent less than that harvested in 1940 and is the smallest harvested acreage since 1895. The Board also secured such information as was available concerning the number of acres which are being removed from cultivation since July 1st to comply with the provisions of the Agricultural Conservation Program, and made allowance for such reduction in acreage in estimating probable production.

The reports from crop correspondents indicate that the crop is later than usual in nearly all States. In Texas and Louisiana, where unfavorable conditions prevailed at seeding time, the crop is from one week to two weeks late and in most other States from about average to one week late. In Tennessee and Missouri, it is from one to two weeks earlier than average.

Reports received up to August 1st concerning boll weevil activity indicate the greatest prospective loss from this source since 1932. The damage is expected to be about twice as great as the 10-year average in all States where the presence of weevils creates a threat to the crop. In interpreting reported condition in terms of probable yield per acre, the Crop Reporting Board has made allowance, as in the past, for probable loss due to boll weevil.

NO CHANGE IN LOUISIANA OFFICIAL GRADES

The Department of Agriculture and Immigration of Louisiana has announced the list of 24 official grades for sale in Louisiana during the 1941-42 season. This list, which was recommended at a conference of fertilizer manufacturers and department officials on July 18th, is the same as the list in force during the past season. The analyses selected were as follows:

0-12-4	4-8-10	6-12-6
0-14-10	4-10-7	8-8-8
0-15-6	4-12-4	10-10-0
3-8-10	4-12-8	10-0-10
3-10-3	5-15-5	12-8-0
3-10-5	6-8-4	15-0-14
4-8-4	6-8-8	16-0-0
4-8-6	6-10-7	42-0-0

Obituary

IRVIN WUICHET

Irvin Wuichet, formerly general manager of the Wuichet Fertilizer Company and a member of the Board of Directors of Wuichet Products, Inc., Dayton, Ohio, died suddenly in his sleep on August 6th, age 61 years.

During his years of active connection with the fertilizer industry, Mr. Wuichet took a prominent part in the National Fertilizer Association. He held the office of Treasurer from 1915 to 1925, also serving on the Board of Directors and the Soil Improvement Committee.

August Crop Report

Estimated Production by U. S. Crop Reporting Board

Crop	Total Production (in thousands) Average 1930-39	Indicated 1940	Indicated August 1, 1941
Corn, all, bu.	2,307,452	2,449,200	2,587,574
Wheat, all, bu.	747,507	816,698	950,953
Winter, bu.	569,417	589,151	684,966
All spring, bu.	178,090	227,547	265,987
Durum, bu.	27,598	34,776	41,132
Other spring, bu.	150,492	192,771	224,855
Oats, bu.	1,007,141	1,235,628	1,148,162
Barley, bu.	224,970	309,235	346,057
Rye, bu.	38,472	40,601	46,462
Buckwheat, bu.	7,315	6,350	5,614
Flaxseed, bu.	11,269	31,217	30,711
Rice, bu.	45,673	52,754	58,970
Grain sorghums, bu.	84,253	121,371	128,731
Hay, all tame, ton	69,650	86,312	85,187
Hay, wild, ton	9,083	8,844	10,715
Hay, clover and timothy,[1] ton	24,587	29,287	25,274
Hay, alfalfa, ton	24,907	30,578	33,239
Beans, dry edible, 100-lb. bag	13,297	16,074	18,728
Peanuts,[2] lb.	1,063,374	7,734,340	1,486,610
Potatoes, bu.	370,045	397,722	369,693
Sweet potatoes, bu.	73,208	61,998	73,984
Tobacco, lb.	1,394,839	1,451,966	1,288,212
Sugarcane for sugar, ton	4,729	4,268	5,890
Sugar beets, ton	9,284	12,192	9,730
Broomcorn, ton	41	41	36
Hops, lb.	[3]34,784	[3]42,552	41,408
Apples, com'l crop, bu.	[3]125,310	[3]114,391	125,568
Peaches, total crop, bu.	[3]54,356	[3]54,430	69,732
Pears, total crop, bu.	[3]27,278	[3]31,622	31,183
Grapes,[4] ton	[3]2,264	[3]2,544	2,569
Pecans, lb.	64,676	88,426	87,641

[1] Excludes sweetclover and lespedeza.

[2] Picked and threshed.

[3] Includes some quantities not harvested.

[4] Production includes all grapes for fresh fruit, juice, wine, and raisins.

Fertilizer Used on Cotton

The U. S. Department of Agriculture has published a survey on the use of commercial fertilizers on the cotton crop of this country. The figures were compiled from data supplied by cotton growers serving as crop correspondents. Consequently the figures cannot be considered as 100 per cent accurate but are valuable as indicating relative measures of change between years.

While the acreage planted to cotton has decreased from a maximum of 45,968,000 acres in 1925 to a low of 23,519 acres in 1941, the number of pounds per acre (when used) has increased from a low point of 205.5 lb. in 1932 to 285.2 lb. in 1941.

The expenditure for fertilizers per acre fertilized during 1941 ranged from $5.22 in North Carolina and $5.16 in South Carolina to $2.09 in Oklahoma. While growers in Texas spent $2.60 per acre where fertilizer was used, only 8 per cent of the total acreage received any fertilizer at all. In this state, however, the use of fertilizers is increasing, the acreage fertilized showing 5 per cent in 1938, 6 per cent in 1939 and 7 per cent in 1940.

State	Average Cost of Fertilizer per Acre when Used		
	Average, 1930-39	1940	1941
Missouri	$2.23	$4.42	$3.06
Virginia	4.43	4.81	4.76
N. Carolina	4.67	5.14	5.22
S. Carolina	3.86	4.76	5.16
Georgia	3.11	3.74	4.06
Florida	2.95	3.12	3.65
Tennessee	2.70	2.85	3.05
Alabama	3.13	3.78	4.04
Mississippi	2.88	3.19	3.32
Arkansas	2.51	2.56	2.72
Louisiana	2.67	2.83	2.73
Oklahoma	2.23	1.89	2.09
Texas	2.58	2.59	2.60
Other states†	2.40	3.89	4.16
Total	$3.23	$3.60	$3.76

State	Acres of Cotton in Cultivation July 1 Thousands		Per Cent of Acres Receiving Fertilizer		Fertilizer Applied per Acre when Used Pounds		Total Fertilizer Used on Cotton Tons	
	1940	1941	1940	1941	1940	1941	1940	1941
Missouri	414	406	20	23	260	180	10,790	8,370
Virginia	33	35	97	99	400	405	6,400	7,088
N. Carolina	841	807	98	98	420	440	173,040	174,020
S. Carolina	1,268	1,243	97	98	405	430	249,075	261,870
Georgia	1,981	1,902	99	99	305	325	299,052	305,988
Florida	68	68	94	98	260	295	8,320	9,882
Tennessee	729	700	58	64	200	205	42,300	45,920
Alabama	2,037	1,874	96	96	315	330	308,070	296,835
Mississippi	2,658	2,498	74	77	220	225	216,370	216,338
Arkansas	2,161	2,095	45	57	165	170	80,190	101,490
Louisiana	1,199	1,090	66	64	180	175	71,190	61,075
Oklahoma	1,900	1,710	1	2	140	135	1,330	2,295
Texas	8,873	8,352	7	8	170	175	52,785	58,450
Other states†	709	739	...	..	182	195	2,547	4,575
Total	24,871	23,519	44.1	46.3	277.4	285.2	1,521,459	1,554,196

* Data for 1941 are preliminary.

† Includes New Mexico, Arizona, California, Illinois, Kansas, and Kentucky.

BRADLEY & BAKER

FERTILIZER MATERIALS - FEEDSTUFFS

AGENTS - IMPORTERS - BROKERS

155 E. 44th Street
NEW YORK

BRANCHES

Clinton St. & Danville Ave.
Baltimore, Md.

505 Royster Building
Norfolk, Va.

1252 West Beaver Street
Jacksonville, Fla.

FERTILIZER MATERIALS MARKET

NEW YORK

Firmer Market on All Materials. Premium Offered for Sulphate of Ammonia. Potash Supplies Believed Adequate. Production of Fish Scrap Satisfactory.

Exclusive Correspondence to "The American Fertilizer."

NEW YORK, August 12, 1941.

The general market for fertilizer materials has become firmer, including organic materials.

Sulphate of Ammonia

Buyers are still trying to cover their requirements, and although the schedule price is unchanged, many buyers have made firm bids considerably over the schedule price in an effort to fill their needs, and in many cases to no avail.

Nitrate of Soda

Demand for the foreign nitrate of soda is brisk but sellers have spot stocks at only a few northern ports and buyers evidently realize that ability to supply this material will be contingent upon available ocean freight.

Potash

Prices are firm at schedule with all available material under contract. In most cases buyers are open for additional quantities but, all in all, it appears that the situation is not too strained.

Superphosphate

Producers are maintaining the price schedule previously announced. Demand was quite active, with current supplies somewhat scarce.

Nitrogenous

Due to a larger demand this market has been rising fairly steadily.

Fish Scrap

The season's catch to date has been very satisfactory and the large catch prompted some sales last week on a reduced basis. All the tonnage so offered was quickly taken up and the market has returned to the level of $4.00 ($4.86 per unit N) and 50 cents, in bulk, f.o.b. fish factory, subject to production.

BALTIMORE

Market Firm Despite Between-Season Lull. Organic Prices Higher. Large Catch of Fish Affects Price of Scrap.

Exclusive Correspondence to "The American Fertilizer."

BALTIMORE, August 12, 1941.

The usual between-season lull is now on, and the market on fertilizer material continues firm. Organic ammoniates for feeding purposes continue high, and this in a measure has had its effect on the market for organic fertilizer materials.

Ammoniates.—Ground animal tankage for feeding is again higher, and ranges around $5.25 per unit of nitrogen and 10 cents per unit of B.P.L., f.o.b. basis Baltimore. Ground dried blood is also ruling slightly higher, and figures about $3.90 per unit of nitrogen, c.i.f. Baltimore.

Nitrogenous Material.—The market on this ingredient is nominally $3.50 per unit of nitrogen, f.o.b. Baltimore.

Sulphate of Ammonia.—There would be a good demand if there were any tonnage available, but all manufacturers are conserving their supplies, and while the nominal market is $29.00 per ton in bulk at ports, there is none obtainable on this basis, with no re-sale being offered either for domestic or export. It is reported that many of the buyers have not been able to cover for their entire requirements.

Nitrate of Soda.—Importers of the Chilean product announced prices on August 1st for a period of three months, to October 31st, at $3.60 per ton advance in 100-lb. bags, making price for August, September, October delivery $33.00 in 100-lb. bags, $32.40 in 200-lb. bags and $30.00 in bulk, f.o.b. port warehouse. Stocks, however, are practically depleted but will doubtless be replenished in the near future. In the meantime the demand is light, as is usual at this time of the year.

Interesting Facts about **SULPHUR** *not Generally Known*

Water Supply

Sulphur is where you find it. Unlike a chemical or other processing plant the location of a Sulphur mine is determined by nature. In the Gulf Coast region the operation of a Sulphur mine requires huge quantities of water and fuel. To make these available for the hot-water or Frasch process requires engineering skill. ★ At the Newgulf mine all local water supplies are carefully developed and conserved. When rivers are high, water from the San Bernard is lifted into a storage reservoir by centrifugal pumps having a capacity of 40,000 gallons per minute. This reservoir covers nearly three hundred acres and holds more than a billion gallons. Even though such a reservoir would adequately supply a fair size city, for Sulphur producing operations it is necessary to obtain additional water from deep wells. ★ Facilities of such magnitude require a corresponding investment of capital and engineering skill and both of these have been used in the Sulphur mine development at Newgulf, Texas.

TEXAS GULF SULPHUR CO.
75 E. 45th Street New York City
Mines: Newgulf and Long Point, Texas

8-TG-1

Fish Scrap.—The catch of fish on the Chesapeake Bay has improved materially during the past two weeks, with result that there has been a slight easing up in the price, and further sales have been reported at about $5.40 per unit of nitrogen and 10 cents per unit of B.P.L., f.o.b. fish factory, in bulk, for shipment "if and when made." If the catch continues good, still lower price is expected, as the market is out of proportion with other protein feeding materials.

Superphosphate.—There is no change in the market, which continues firm at previously quoted levels of $9.00 per ton of 2,000 lb. basis 16 per cent for run-of-pile, and $10.00 for flat 16 per cent grade. both in bulk, f.o.b. producers' works, Baltimore. There have been no anxious sellers, and there is considerable anxiety among manufacturers about availability of vessels to carry rock to this port. While vessels are already scarce, there is no telling when ships now in the rock-carrying service may be requisitioned for other work, in which event there will likely be a shortage of superphosphate.

Bone Meal.—There is no activity in the market on either raw or steamed bone meal, and 3 and 50 per cent steamed bone meal continues to be nominally quoted at $37.00 to $38.00 per ton, f.o.b. Baltimore.

Potash.—Shipments are now being received against contracts booked sometime ago, and barring unforeseen stoppage of work in any of the domestic plants, it is anticipated that there will be sufficient tonnage of the domestic product to take care of U. S. requirements.

Bags.—The market on burlap has eased off in consequence of reports that ceiling prices will soon be established, and the present market is about $205.00 per thousand for plain new 10-oz. bags, basis 40 cut 54 in., delivered Baltimore for fall delivery.

ATLANTA

Price of Chilean Nitrate Advances. Sulphate of Ammonia in Good Demand. Higher Fertilizer Prices Probable.

Exclusive Correspondence to "The American Fertilizer."

ATLANTA, August 12, 1941.

The price on Chilean nitrate of soda was advanced $3.00 per ton for deliveries up to and through October 31st but so far there has not been any advance in domestic material.

The demand for sulphate of ammonia is still active, with signs that there may be a shortage before the coming season is over.

Organic ammoniates, likewise, have shown a stronger tend over the last few weeks and prices are being gradually marked up.

Fertilizer prices generally have been laggard in reflecting the better economic outlook, but it is now apparent that a higher level will undoubtedly prevail over the next twelve months and buyers are acting accordingly.

The market generally are as follows:

South American Blood.—$3.60 ($4.37½ per unit N), c.i.f.

Imported Tankage.—$4.00 ($4.86 per unit N) and 10 cents, c.i.f.

Domestic Nitrogenous Tankage.—$2.50 ($3.04 per unit N), western producing points.

Acidulated Fish.—Nothing quoted.

Menhaden Machine Dried Scrap.—$61.00, f.o.b. South Atlantic fish factories. Meal, $5.00 per ton higher.

Sulphate of Ammonia.—Unchanged as to price but offerings limited.

Nitrate of Soda.—Chilean $30.00 bulk through October 31st, basis f.o.b. the port.

Cottonseed Meal.—Prime 8 per cent, $34.00, Memphis; southeastern mills, $33.00 to $34.00.

Manufacturers' Sales Agents for **DOMESTIC**

Sulphate of Ammonia

Ammonia Liquor :: Anhydrous Ammonia

HYDROCARBON PRODUCTS CO., INC.

500 Fifth Avenue, New York

CHICAGO

Fertilizer Organics Market Firm with Few Offerings. Feed Material Prices Advanced.

Exclusive Correspondence to "The American Fertilizer."

CHICAGO, August 11, 1941.

A continued firm situation prevails in the organic market, with no new offerings of consequence on the market. Buying interest is apparent, although some of the trade is not inclined to follow the higher asking prices. The bone meal market is steady, supply being small, and demand equally light.

Feeding materials are still in broad demand. but sales are somewhat slow, sellers asking sharp advances over previous trades.

Nominal prices are as follows: High grade ground fertilizer tankage, $3.50 to $3.75 ($4.20½ to $4.56 per unit N) and 10 cents; standard grades crushed feeding tankage, $4.75 to $4.85 ($5.77½ to $5.89½ per unit N) and 10 cents; blood, $3.60 to $3.75 ($4.37½ to $4.56 per unit N); dry rendered tankage, 97 cents to $1.02½ per unit of protein, Chicago basis.

CHARLESTON

Scarcity of Some Materials Developing. Prices of Organics Tend to Increase.

Exclusive Correspondence to "The American Fertilizer."

CHARLESTON, August 12, 1941.

Scarcity of minerals of various kinds is beginning to show up, although suppliers are hopeful that they will be able to take care of their customers' wants.

Nitrogenous.—This material is getting scarce and quotations are around $2.85 ($3.46½ per unit N) delivered southeastern ports.

Blood.—Is being quoted around $3.35 ($4.07 per unit N) bagged, c.i.f. ports, where freight can be obtained. Around $3.50 ($4.25½ per unit N) bulk, Chicago.

Fish Meal.—Menhaden meal is offered at $63.00 to $65.00 per ton, f.o.b. Baltimore.

Cottonseed Meal.—8 per cent grade, $33.25, f.o.b. Memphis; $33.00, Atlanta.

Superphosphate.—It is beginning to be slightly doubtful as to whether the southeast will be able to furnish the required quantity this season.

TENNESSEE PHOSPHATE

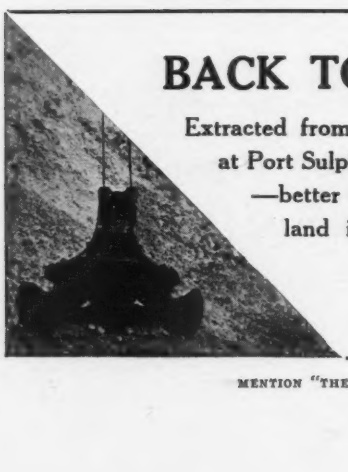
Weather Favors Tobacco and Corn Crops. Phosphate Shipping Active to Acidulators and for Direct Application.

Exclusive Correspondence to "The American Fertilizer."

COLUMBIA, TENN., August 11, 1941.

The hot days and cool nights of August with several good rains during the past two weeks have given the corn crop of this section almost a certainty of bumper yields and high quality. Tobacco is also giving a fine account of itself and much of the earliest planting is cut and hanging in the barns, getting ready to permit those buyers of the finer, the lighter, the milder, the better tobacco for all the best cigarettes, to pay from 30 to 50 per cent more for it than for ordinary tobaccos, when the chant of the tobacco auctioneer sings through the loose leaf floors of the many tobacco warehouses in 60 and 90 days.

Manufacturers of tobacco fertilizers are finding out from the kind of burley grown on all this Middle Tennessee and Kentucky bluegrass soil which is so high in phosphate, that one essential of a good tobacco fertilizer is that it be high in phosphate. Some of the poorer highland rim soils of both states, when given ample applications of ground phosphate rock, have been found to grow just as good burley as any.



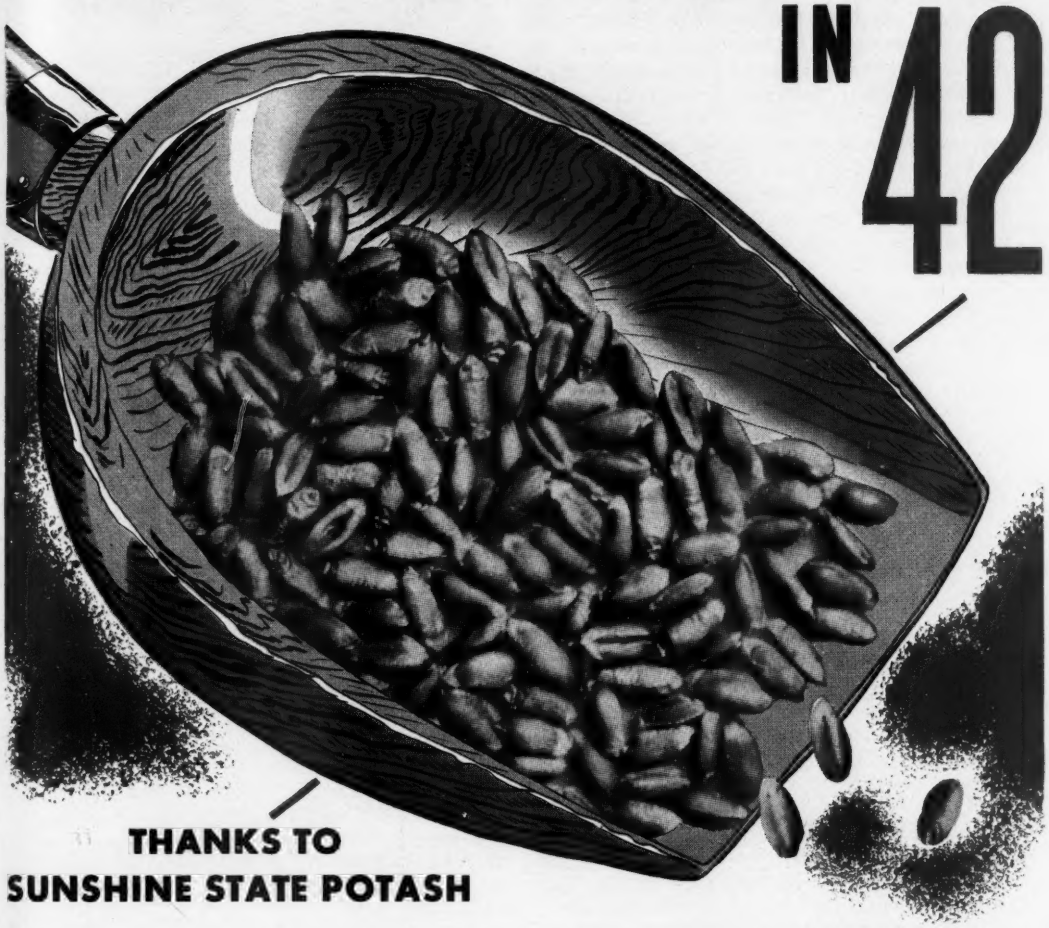
BACK TO THE LAND

Extracted from deposits beneath the Gulf Coast at Port Sulphur, La., and Freeport, Tex., sulphur —better than 99½% pure—goes back to the land in fertilizer to help solve soil problems.

FREEPORT SULPHUR COMPANY

122 East 42nd Street, New York City

PLUMP AND PLENTIFUL IN 42



THANKS TO SUNSHINE STATE POTASH

● For bumper crops in '42, include plenty of potash in the fertilizer mix you are now preparing for fall planting. Potash is one of the plant foods which help winter wheat and other small grains develop a quicker start in life. It encourages resistance to disease and winter injury. It grows stronger stems and prevents lodging, develops longer heads, plumps out kernels, and makes grains heavier.

At a time of increasing dependence upon scientific methods of agriculture, great credit is due to those progressive fertilizer manufacturers who today are supplying producers of all major crops with complete fertilizers containing potash as recommended by local agricultural authorities. To them we offer Sunshine State Potash, a clean, free-flowing material of uniform analysis well suited to fertilizer manufacture.

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Also 50% K_2O Grade
MANURE SALTS
22% K_2O Minimum
Trademark Reg. U. S. Pat. Off.

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UNITED STATES POTASH COMPANY, INCORPORATED • 30 Rockefeller Plaza, New York, N. Y.

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

Outside mining and plant operations are proceeding rapidly at all installations except one. Here a failure of the large derrick handling the entire output of the washer to wet storage and feeding the dryers from this wet storage caused a shutdown two weeks earlier than had been expected. Extensive changes were to be made and during actual installation the plant would have been shut down. Fortunately large stocks of dry rock, both unground and ground, were on hand so there has been no interruption in the heavy shipments.

Shipments to all consuming channels are actively under way and farmers have reached the season during which the great bulk of ground rock for direct application for the year goes out, so that everybody is busy.

It is understood that the long disputed controversy between the Frierson Estate and the International Agricultural Corporation, has finally been settled by assigning definite areas on which mining is to be conducted. Apparently it was a very advantageous settlement for both parties and gives the I. A. C. a large tonnage easily accessible to their plant for operation by truck.

AMERICAN CYANAMID PLANS CHANGE IN CAPITAL SETUP

A meeting of stockholders of the American Cyanamid Company has been called for August 25, 1941, to vote on plan of capital simplification involving offering to holders of all three series of 5 per cent cumulative convertible preferred stock the opportunity to exchange their present holdings share for share for a new 5 per cent cumulative preference stock and the redemption of all of the present 5 per cent cumulative convertible preferred stock that was not so exchanged. Convertible preferred stock would be eliminated from capital structure.

The new preference stock, besides giving shareholders the same yield in dividends, would have the same $10 par value as the present convertible preferred stock and the same $10.50 call price.

COTTON PENALTY INCREASED

The Department of Agriculture has announced that the penalty rate on cotton of the 1941 crop market in excess of the farm quota will be 7 cents a pound. This is a marked increase over the 1940 rate of 3 cents a pound.

DATES FOR SOUTHERN CONVENTION OF N. F. A.

The Seventeenth Annual Southern Convention of the National Fertilizer Association will be held in the Atlanta-Biltmore Hotel, Atlanta, Ga., on November 17, 18, and 19, 1941.

CLASSIFIED ADVERTISEMENTS

Advertisements for sale of plants, machinery, etc., and for help and employment, in this column, same type as now used, 60 cents per line, each insertion.

SITUATIONS WANTED

AGRONOMIST beyond draft age, trained in soils, crops, and fertilizers of Iowa, Ohio, New Jersey, but experienced with all southern fertility practices, Texas to Florida inclusive, seeks commercial or college connection anywhere. Address "500," care THE AMERICAN FERTILIZER, Philadelphia.

SUPERINTENDENT or Assistant desires change. Address "505," care THE AMERICAN FERTILIZER, Philadelphia.

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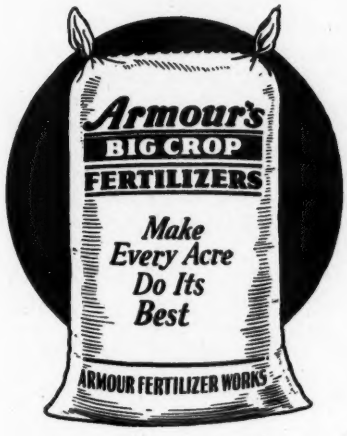

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Havana, Cuba
Houston, Texas
Jacksonville, Fla.
Montgomery, Ala.
Nashville, Tenn.
New Orleans, La.
New York, N. Y.
Norfolk, Va.
Presque Isle, Me.
San Juan, P. R.
Sandusky, Ohio
Wilmington, N. C.

BEYOND AND BEHIND THE BOOM

(Continued from page 11)

employment for ten years has been a "cause" rather than a condition, "a permanent charge upon the rest of us," as Administrator Hopkins once said. In 1935 a municipal official in Washington, in charge of relief, conducted a realistic investigation into the previous employment records of 100 unemployed upon the relief rolls. He found that the men averaged only 27 days' work per year during the lush years of 1928 and 1929 when "Men Wanted" signs were all over the District. Some of the 100 had not worked at all, being congenitally opposed to labor. Others had floated around, being born unresourceful, and with a lack of will to stick on a job.

Two years later Nation's Business employed Crossley, Inc., an economic fact-finding agency, to take 1,000 of the unemployed list in Baltimore who were on relief, and find out what they did in 1928 and 1929. The survey disclosed that fewer than half had ever worked as employees in any field of business. More than 50 per cent of this group were housewives who had always been supported by their husbands or relatives and had never trained themselves for any gainful occupation. Twenty-one per cent had no occupation, and 17 per cent were over 70 years of age. And yet we look upon that six, seven, eight, ten millions of unemployed as employables when they had never been employed, were unfit for employment, or were too old for employment.

The earnings of these two groups, the 50-odd per cent who worked at all when work was everywhere available, were less than $40 a month.

A committee of the National Chamber of Commerce reported in 1934:

"During the most prosperous years 60 per cent or more of the population of a typical community are unemployed—that is, that percentage of the population is not engaged in work for pay."

The unemployment pool that has been the basis of most of our subsidy legislation in the last ten years is made up of two classes: those with a capacity to work and those with no capacity to work. It furnishes at once a social and an economic problem. It is to attach no stigma to a man or woman who has always been a charge upon relatives or county, to classify such a person as unemployable. But any look "beyond the boom" must take into account the number of those who are employable and able to contribute to the extra production the situation demands.

These are some of the practical considerations that business men raise when they discuss the national armament program. Such reservations are not to be taken as implying a defeatist attitude or a lack of the high courage needed for tackling a new and unaccustomed job. They are evidence of a practical concern with ways and means, of a looking ahead and sizing up negative obstacles as well as affirmative responsibilities. Businessmen are not given to bursts of rhapsody; theirs is the prosaic task of supplying the money and materials which to others may be only figures on a chart or figures of speech in an oration.

(To be continued in the next issue)

CONSERVING MEN, MONEY AND MATERIALS IN ESSENTIAL INDUSTRIES

In times like these, when industry is confronted with emergency production demands, the need for more effective accident controls in order to conserve men, money and materials becomes of paramount importance. Plant expansion, development of new processes, maintenance of heavily-worked equipment, employment of new workers, and other similar problems call for more than usual ingenuity and skill on the part of management, if a "job" is to be done not only well but safely.

These vital considerations are emphasized in a new report issued by the Industrial Safety Section of the Metropolitan Life Insurance Company. The report is entitled, "Conserving Men, Money and Materials in Essential Industries." It is basically a discussion check list for the industrial executive concerned with emergency production.

The report lays particular stress on the proper consideration of accident costs. Of far

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Whether your production requirements involve large or small quantities, consult the CHEMICO engineers for authoritative advice and recommendations. CHEMICO designs, remodels and builds complete acid and fertilizer plants, and CHEMICO recommendations are based on 26 years of specialized experience. Your inquiry is invited, and will involve no obligation.

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Agricultural authorities have shown that a lack of Boron in the soil can result in deficiency diseases which seriously impair the yield and quality of crops.

When Boron deficiencies are found, follow the recommendations of local County Agents or State Experiment Stations.

Information and references available on request.

AMERICAN POTASH & CHEMICAL CORPORATION
70 PINE STREET, NEW YORK CITY
Pioneer Producers of Muriate of Potash in America

See Page 4

greater significance than the threat of personal-injury accidents are the enormous potential losses of precious time and the spoilage of equally precious materials that result from mishaps sometimes termed "near accidents"—indirect losses which are generally overlooked in compiling accident reports or statistics, yet which to the production executive represent very real items of industrial waste.

As an aid to the study of industrial accidents and to point up proper means for their control, the report briefly develops several fundamental considerations for employee safety.

Copies of this report are available to executives who address the Bureau on their business stationery. Address: Policyholders Service Bureau, Metropolitan Life Insurance Company, One Madison Avenue, New York City.

WAR DEPARTMENT ORDERS NEW AMMONIA PLANT

The War Department has awarded to the Commercial Solvents Corporation of New York the contract for the construction of a plant to produce anhydrous ammonia. The plant, which will cost $9,250,000, will be located at Sterlington, Louisiana.

Following its completion, Commercial Solvents will also manage the operation of the plant. The Army has contracted to take the entire output of ammonia produced during the first year.

COTTONSEED PRODUCTION INCREASES

The production of cottonseed products during the crop year from August 1, 1940, to July 31, 1941, reflected the increase in the 1940 cotton crop over that of the previous year. During the 1940-41 year, receipts of cottonseed totaled 4,488,725 tons, an increase of about 10 per cent over the 1939-40 receipts of 4,069,636 tons. Cottonseed crushed during the two years amounted to 4,396,191 tons in 1940-41 and 4,150,755 tons in 1939-40.

Production of cottonseed cake and meal showed only a slight increase, 1,952,911 tons in 1940-41 and 1,882,217 tons in 1939-40. Shipments dropped from 1,922,434 tons in 1939-40 to 1,866,446 tons in 1940-41. As a consequence, the supply on hand on July 31, 1941, totaled 165,966 tons, compared with 79,501 tons a year previous.

Production of other products showed: hulls, 1,107,688 tons in 1940-41, 1,054,778 tons in 1939-40; linters, 1,207,309 bales in 1940-41, 1,072,339 bales in 1939-40; crude oil, 1,424,899,485 pounds in 1940-41; 1,325,241,460 pounds in 1939-40.

FERTILIZER PROBLEMS FROM THE FERTILIZER INDUSTRY VIEWPOINT

(Continued from page 7)

this, perhaps we should state it another way. We believe from observation that a great deal of the stable manure as it is handled on farms deliver to the crops much less plant food than we frequently calculate. If this is true, the manure used is valuable principally as organic matter and some of our recommendations for supplementary fertilizer use might well be revised. While it is undoubtedly true that with the use of stable manure, the corn crop in Pennsylvania can best afford to have the *first* commercial fertilizer expenditure made for phosphates, some of us in the fertilizer industry question whether recommendations frequently made for the use of *only* superphosphate with manure on corn and some other crops are as sound as they might be. Those of us who feel that way think we know, from observation on the farms of numerous fertilizer users we are serving, that there are many conditions where corn or other grain crops are grown, in which certainly potash and in some instances also nitrogen pay a handsome return. There are a few factors in the industry who do not feel this way but are convinced that superphosphate and manure are *all* that should be used. Whatever the answer to this difference of opinion may be, I am sure that industry representatives are ready to face the facts but we feel that we need more on which to base our recommendations than past experimental work in Pennsylvania furnishes us.

(Continued on page 26)

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Dependable for Fifty Years
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Batch Mixers—Dry Batching
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If you are seeking real efficiency in handling acids, here's an installation at the Tennessee Corp., New Albany, Ind., that illustrates the point.

This Durimet Stainless Steel Self-Priming Centrifugal Pump is connected with tank car, acid storage tank and plant service by four lines of acid-proof pipe fitted with four Durimet Y-Valves. In this way, one pump moves acid . . .

(1) From Tank Car to Storage, or
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(3) From Storage to Plant Service.

Built of the finest corrosion-resisting metals known, Duriron's Pumps, Valves, Pipe and Fittings will give you long-life, care-free acid-handling service.

THE DURIRON COMPANY, Inc.
Dayton, Ohio

The place of green manuring and organic matter in sound fertilizer practice is one which I assume we all recognize as important. There is, however, a wealth of information on these subjects which needs to be developed and dramatized so that more of us will know much more than we now know about it. This again overlaps into the subject of fertilizing for rotations. One phase of it might well be developed around the idea of "mineralized organic matter." Another phase which we need to know more about is the possible soundness of plowing nitrogen down with cover crops to speed the breakdown of the organic matter. A third is the place of domestic rye grass as a green manure and cover crop in potato or corn rotations.

Returns from Fertilizer Use in Pennsylvania

Returns from the survey made recently by The National Fertilizer Association indicate that for each dollar spent for fertilizer, the amount of increased value of crops produced is quite high. In this State, that survey indicates two dollars and fifteen cents as the corn silage return for each fertilizer dollar invested by users, and for corn harvested as grain, two dollars and eighty-seven cents.

For potatoes, three dollars and seventy-eight cents return for each dollar spent for fertilizer is indicated from the survey.

Conclusion

The subjects mentioned here are obviously only some of the phases of potato and corn fertilization on which we, in the fertilizer industry, would like more information. With more seriousness than you may at first think, I suggest that some of us involved in the need for and development of such experiments offer ourselves as "sacrifices" in the following manner: Some of us have talked wisely and well as to each farm being a problem in itself. If anything like the experiments suggested here are started, we have an enviable opportunity in using the layout to test our powers of reasoning and, by putting down our answers in advance, we may get double value from the tests that will be made.

(a) For instance, once the locations are selected and the outline accepted for the experiments, we might ask our "quick soil test" men to study the soil and report in advance which of the rates and ratios are indicated as best adapted to the soil as it is.

(b) Next, our professional agronomists (and horticulturists) usually base their recommendations on what has gone before—on when manure was last applied, or legume residues plowed under; on the character and amount of previous fertilization; and on soil conditions as they see them. We should ask these authorities to answer also the question as to which of the various rates and ratios should give best results, these anticipations to be produced in writing prior to growth getting well under way.

(c) Fieldmen and agronomists in the employ of various organizations in the fertilizer industry also make typical recommendations which in most cases are specific and to individual farmers. Included in the fertilizer industry also are those who have interest in selling more nitrogen, more phosphorus and more potash, as well as more mixed fertilizer. Some of us are champions of ordinary analysis mixed fertilizer and some of us feel sure that high analysis mixtures of 40 units or higher concentrations are at least equally good. Representatives of all of these interests should also be asked (even though it might have to be under some compulsion) to write down in advance what they expect will be the results of the experiments.

You may smile at this suggestion. You may even doubt its value. You may object on the ground that research should not be confused by even asking for anyone's conclusions before it has been under way for several years, but I still believe that we would all gain much by comparing our written-down ideas with the results as they develop during a series of years which would probably be required to give us sound conclusions.

Location

Last and not least, we feel that for potatoes in particular and perhaps for both potatoes and corn, experiments along the lines suggested should be located in at least two and perhaps as many as six different areas in the State, each location to be typical of the important areas for each of the crops involved.

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for the Fertilizer Plant
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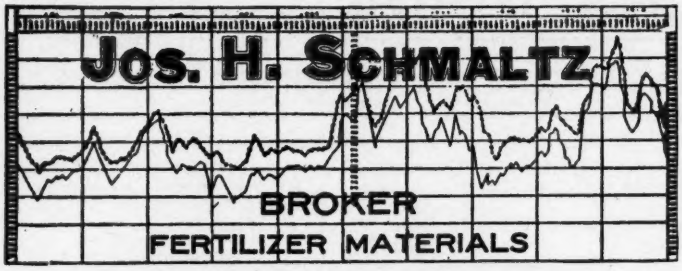

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BUYERS' GUIDE

A CLASSIFIED INDEX TO ALL THE ADVERTISERS IN "THE AMERICAN FERTILIZER"

This list contains representative concerns in the Commercial Fertilizer Industry, Including fertilizer manufacturers, machinery and equipment manufacturers, dealers in and manufacturers of commercial fertilizer materials and supplies, brokers, chemists, etc.
For Alphabetical List of Advertisers, see page 33.

ACID BRICK
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.

ACID EGGS
Chemical Construction Corp., New York City.

ACIDULATING UNITS
Chemical Construction Corp., New York City.
Sackett & Sons Co., The A. J., Baltimore, Md.

AMMO-PHOS
American Cyanamid Co., New York City.

AMMONIA—Anhydrous
Barrett Company, The, New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.
Hydrocarbon Products Co., New York City.

AMMONIA LIQUOR
Barrett Company, The, New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.
Hydrocarbon Products Co., New York City.

AMMONIA OXIDATION UNITS
Chemical Construction Corp., New York City.

AMMONIATING EQUIPMENT
Sackett & Sons Co., The A. J., Baltimore, Md.

AMMONIUM NITRATE SOLUTIONS
Barrett Company, The, New York City

AUTOMATIC ELEVATOR TAKEUPS
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

BABBITT
Sackett & Sons Co., The A. J., Baltimore, Md.

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Bagpak, Inc., New York City.
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS—Cotton
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS—Paper
Bagpak, Inc., New York City.
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS (Waterproof)—Manufacturers
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS—Dealers and Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

BAGGING MACHINES—For Filling Sacks
Atlanta Utility Works, East Point, Ga.
Bagpak, Inc., New York City.
Sackett & Sons Co., The A. J., Baltimore, Md.

BAG FILERS
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.

BEARINGS
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Sackett & Sons Co., The A. J., Baltimore, Md.

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Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
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BELTING—Leather, Rubber, Canvas
Jeffrey Manufacturing Co., The, Columbus, Ohio.
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BOILERS—Steam
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Armour Fertilizer Works, Atlanta, Ga.
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Bradley & Baker, New York City.
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McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.
Wellmann, William E., Baltimore, Md.

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Pacific Coast Borax Co., New York City.

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A Classified Index to Advertisers in "The American Fertilizer"

BUYERS' GUIDE

For an Alphabetical List of all the Advertisers, see page 33

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Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.

BURNERS—Sulphur
Chemical Construction Corp., New York City.

BURNERS—Oil
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.

CABLEWAYS
Hayward Company, The, New York City.

CARBONATE OF AMMONIA
American Agricultural Chemical Co., New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.

CARS—For Moving Materials
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CARTS—Fertilizer, Standard and Roller Bearing
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.

CASTINGS—Acid Resisting
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Duriron Co., Inc., The, Dayton, Ohio.

CASTINGS—Iron and Steel
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CEMENT—Acid-Proof
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.

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Sackett & Sons Co., The A. J., Baltimore, Md.
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Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CHAMBERS—Acid
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.

CHEMICAL APPARATUS
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Duriron Co., Inc., The, Dayton, Ohio.
Monarch Mfg. Works, Inc., Philadelphia, Pa.

CHEMICALS
American Agricultural Chemical Co., New York City.
American Cyanamid Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Barrett Company, The, New York City.
Bradley & Baker, New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.

CHEMICALS—Continued
Huber & Company, New York City.
Phosphate Mining Co., The, New York City.
Wellmann, William E., Baltimore, Md.

CHEMICAL PLANT CONSTRUCTION
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Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CHEMISTS AND ASSAYERS
Gascoyne & Co., Baltimore, Md.
Shuey & Company, Inc., Savannah, Ga.
Stillwell & Gladding, New York City.
Wiley & Company, Baltimore, Md.

CLUTCHES
Jeffrey Manufacturing Co., The, Columbus, Ohio.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CONCENTRATORS—Sulphuric Acid
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.

CONDITIONERS AND FILLERS
American Limestone Co., Knoxville, Tenn.
Dickerson Co., The, Philadelphia, Pa.
Phosphate Mining Co., The, New York City.

CONTACT ACID PLANTS
Chemical Construction Corp., New York City.

COPPER SULPHATE
Tennessee Corporation, Atlanta, Ga.

COTTONSEED PRODUCTS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Schmaltz, Jos. H., Chicago, Ill.
Taylor, Henry L., Wilmington, N. C.
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CRANES AND DERRICKS
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.
Link-Belt Speeder Corp., Chicago, Ill., and Cedar Rapids, Iowa.
Sackett & Sons Co., The A. J., Baltimore, Md.

CYANAMID
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American Cyanamid Co., New York City.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Jett, Joseph C., Norfolk, Va.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

DENS—Superphosphate
Chemical Construction Corp., New York City.
Stedman's Foundry and Mach. Works, Aurora, Ind.

Andrew M. Fairlie
CHEMICAL ENGINEER
22 Marietta Street Building ATLANTA, GA.
CABLE ADDRESS: "SULFACID ATLANTA"

SULPHURIC Acid Plants . . . Design, Construction, Equipment . . . Operation . . . Mills-Packard Water-Cooled Acid Chambers, Gaillard Acid-Cooled Chambers, Gaillard Acid Dispersers, Contact Process Sulphuric Acid Plants.

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Jeffrey Manufacturing Co., The, Columbus, Ohio.
Sackett & Sons Co., The A. J., Baltimore, Md.

DRIVES—Electric
Link-Belt Company, Philadelphia, Chicago.

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Stedman's Foundry and Mach. Works, Aurora, Ind.

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Link-Belt Company, Philadelphia, Chicago.
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Link-Belt Company, Philadelphia, Chicago.
Link Belt Speeder Corp., Chicago, Ill., and Cedar Rapids, Iowa.

FERTILIZER MANUFACTURERS
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American Cyanamid Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Farmers Fertilizer Co., Columbus, Ohio
International Agricultural Corporation, Chicago, Ill.
Phosphate Mining Co., The, New York City.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

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Bradley & Baker, New York City.
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Wellmann, William E., Baltimore, Md.

FOUNDERS AND MACHINISTS
Atlanta Utility Works, East Point, Ga.
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GARBAGE TANKAGE
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Stedman's Foundry and Mach. Works, Aurora, Ind.

GEARS—Silent
Link-Belt Company, Philadelphia, Chicago.
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GELATINE AND GLUE
American Agricultural Chemical Co., New York City.

GUANO
Baker & Bro., H. J., New York City.

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IMPORTERS, EXPORTERS
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
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Bradley & Baker, New York City.
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IRON SULPHATE
Tennessee Corporation, Atlanta, Ga.

INSECTICIDES
American Agricultural Chemical Co., New York City.

LACING—Belt
Sackett & Sons Co., The A. J., Baltimore, Md.

LIMESTONE
American Agricultural Chemical Co., New York City.
American Limestone Co., Knoxville, Tenn.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
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LOADERS—Car and Wagon, for Fertilizers
Jeffrey Manufacturing Co., The, Columbus, Ohio.
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Sackett & Sons Co., The A. J., Baltimore, Md.

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Atlanta Utility Works, East Point, Ga.
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.
Duriron Co., Inc., The, Dayton, Ohio.
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Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

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Hayward Company, The, New York City.
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MACHINERY—Elevating and Conveying
Atlanta Utility Works, East Point, Ga.
Hayward Company, The, New York City.
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Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

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MACHINERY—Power Transmission
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Link-Belt Company, Philadelphia, Chicago.
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Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MANGANESE SULPHATE
McIver & Son, Alex. M., Charleston, S. C.
Tennessee Corporation, Atlanta, Ga.

MIXERS
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Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

NITRATE OF SODA
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Barrett Company, The, New York City.
Bradley & Baker, New York City.
Chilean Nitrate Sales Corp., New York City.
Huber & Company, New York City.
International Agricultural Corporation, Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
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NITRATE OVENS AND APPARATUS
Chemical Construction Corp., New York City.

NITROGEN SOLUTIONS
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Ashcraft-Wilkinson Co., Atlanta, Ga.
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Smith-Rowland Co., Norfolk, Va.
Wellmann, William E., Baltimore, Md.

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Monarch Mfg. Works, Philadelphia, Pa.

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Chemical Construction Corp., New York City.

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Chemical Construction Corp., New York City.

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Huber & Company, New York City.
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Schmaltz, Jos. H., Chicago, Ill.
Southern Phosphate Corp., Baltimore, Md.
Taylor, Henry L., Wilmington, Del.
Wellmann, William E., Baltimore, Md.

PIPE—Acid Resisting
Duriron Co., Inc., The, Dayton, Ohio.

PIPES—Chemical Stoneware
Chemical Construction Corp., New York City.

PIPES—Wooden
Stedman's Foundry and Mach. Works, Aurora, Ind.

PLANT CONSTRUCTION—Fertilizer and Acid
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.

POTASH SALTS—Dealers and Brokers
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
International Agricultural Corporation, Chicago, Ill.
Jett, Joseph C., Norfolk, Va.
Schmaltz, Jos. H., Chicago, Ill.
Taylor, Henry L., Wilmington, Del.
Wellmann, William E., Baltimore, Md.

POTASH SALTS—Manufacturers and Importers
American Potash and Chem. Corp., New York City.
Potash Co. of America, Baltimore, Md.
United States Potash Co., New York City.

PULLEYS AND HANGERS
Atlanta Utility Works, East Point, Ga.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

PUMPS—Acid-Resisting
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Duriron Co., Inc., The, Dayton, Ohio.
Monarch Mfg. Works, Inc., Philadelphia, Pa.

PYRITES—Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., New York City.
Jett, Joseph C., Norfolk, Va.
Wellmann, William E., Baltimore, Md.

QUARTZ
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.

RINGS—Sulphuric Acid Tower
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SEPARATORS—Air
Sackett & Sons Co., The A. J., Baltimore, Md.

SEPARATORS—Including Vibrating
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

SEPARATORS—Magnetic
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SHAFTING
Atlanta Utility Works, East Point, Ga.
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SHOVELS—Power
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Sackett & Sons Co., The A. J., Baltimore, Md.

SPRAYS—Acid Chambers
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STACKS
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SULPHATE OF AMMONIA
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SUPERPHOSPHATE
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Phosphate Mining Co., The, New York City.
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Sackett & Sons, Co., The A. J., Baltimore, Md.

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Fairlie, Andrew M., Atlanta, Ga.

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UREA
DuPont de Nemours & Co., E. I., Wilmington, Del.

UREA-AMMONIA LIQUOR
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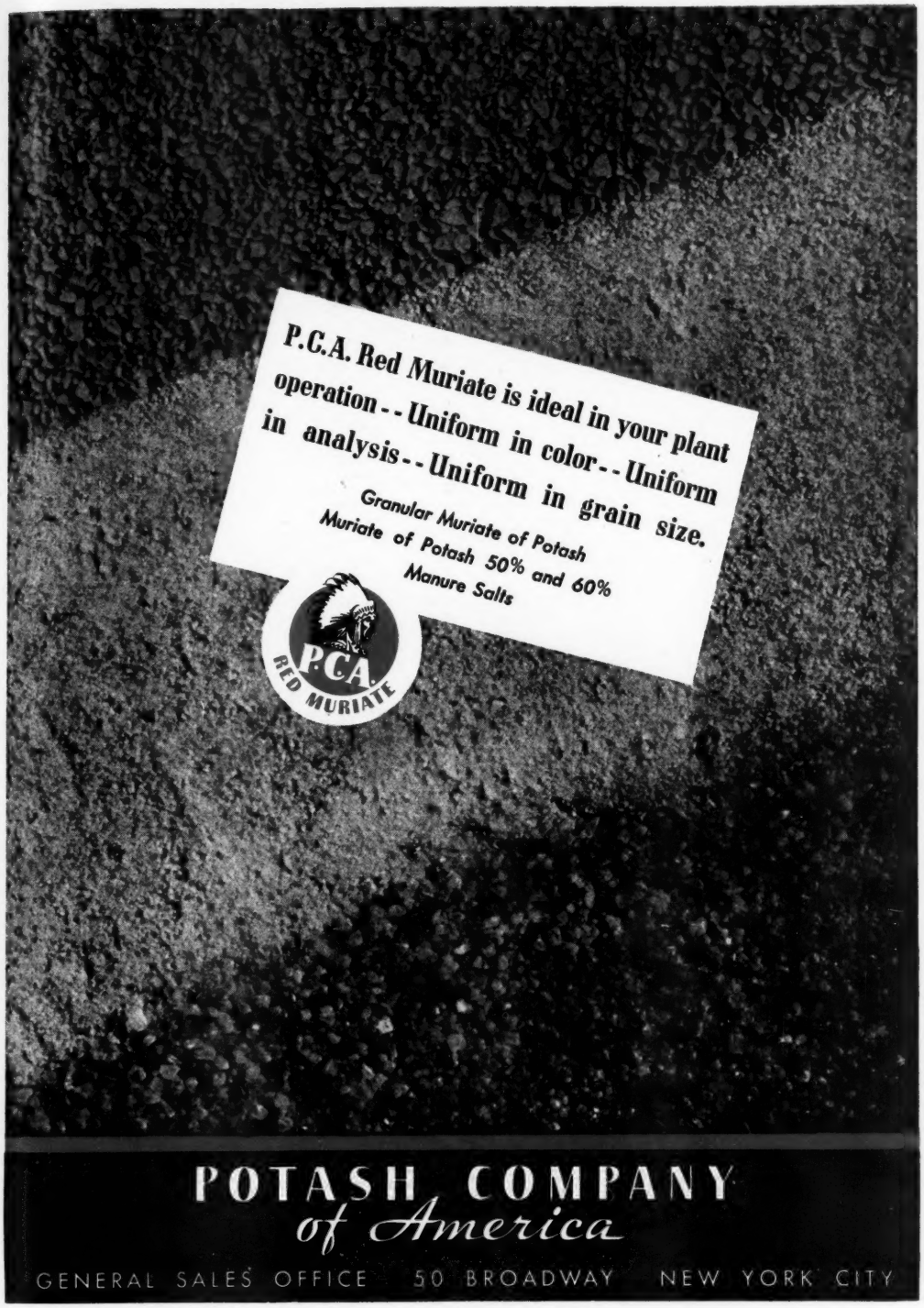
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BALTIMORE - CHICAGO - SAVANNAH - TAMPA

Sole Distributors of

DRIED ACTIVATED SLUDGE
SANITARY DISTRICT of CHICAGO

IMPORTERS *EXPORTERS*

POTASH SALTS
SULPHATE of AMMONIA
NITRATE of SODA
PERUVIAN BIRD GUANO
FISH MEAL, BONE MEAL
TANKAGE, BLOOD
NITROGENOUS
AND ALL OTHER
FERTILIZER MATERIALS